

Amendments to the Specification:

After the title and before the first paragraph, please insert the following paragraph:

THIS APPLICATION IS A U.S. NATIONAL PHASE APPLICATION OF PCT INTERNATIONAL APPLICATION PCT/JP2003/011604.

Please replace the paragraph, beginning at page 8, line 13, of the September 24, 2004 Article 34 Amendment with the following rewritten paragraph:

Color conversion means of carrying out correction to make the color of said pixel signal coincident with or close to said target color by using said pixel signal, information of identifying a photographic scene by also using information, other than pixel information, included in said pixel signal, and said target color, wherein.

Please delete the paragraph, beginning at page 8, line 19, of the September 24, 2004 Article 34 Amendment.

~~— said color conversion means determines said correction degree by using not only said two chromaticity components of said pixel signal to be corrected but also said luminance component of said pixel signal to be corrected.~~

Please replace the paragraph, beginning at page 1, line 4, of the specification with the following paragraph:

The present invention relates to an image processing apparatus, an image processing method, a program, a recording medium, a printer apparatus, a television receiver, a projector apparatus, a photographing apparatus and a mobile communication terminal. More particularly, the present invention relates to a memory color correction technology of automatically converting the color in a specific region of an input image signal into a more desirable color, and. The present invention is widely applicable to output devices, such as a display and a printer, input devices, such as a digital camera and a digital camcorder, and PC application software being used for photographic image databases and retouching.

Please replace the paragraph, beginning at page 1, line 18, of the specification with the following rewritten paragraph:

~~Since~~ In the prior art, there were insufficiencies in the color correction technologies required for numerous full-color devices, such as a camera, a display and a printer, more specifically, the color correction technologies of correcting the inherent characteristics of devices, such as the spectroscopic characteristic of a CCD in a camera and the spectroscopic characteristic of ink in a printer, were being developed, the correction accuracy of the above-mentioned color correction was insufficient; on the assumption of this. Thus, the technologies conventionally referred to as selective color adjustment and memory color correction were intended to correct improper color reproduction owing to the insufficient accuracy.

Please replace the paragraph, beginning at page 2, line 8, of the specification with the following rewritten paragraph:

The characteristics inherent in the devices have ~~become able to be corrected highly accurately~~ been accurately corrected quantitatively owing to the development of the color correction technology in recent years, ~~and considerably.~~ Considerably faithful color reproduction has ~~become able to be~~ been attained in the sense that the colors quantitatively close to those of an object can be displayed or printed.

Please replace the paragraph beginning at page 2, line 15, of the specification with the following rewritten paragraph:

However, ~~in the present circumstances where the use of~~ digital cameras are being ~~has become~~ widespread and ~~being substituted for~~ silver salt analog photographs, ~~as high.~~ High- quality picture technologies that were impossible for analog silver salt photographs, ~~have been achieved using~~ technologies of selective color adjustment and memory color correction having target levels higher than previous levels ~~have become required.~~ This is because a camera of photographing a natural world is different from a copier wherein faithfulness to manuscripts is important, ~~in that displaying.~~ Displaying on a display and printing on paper are different from photographing an object with respect to physical shape and absolute size, light source and the time of photographing being separate from the time of reproduction, ~~and it.~~ It is known that a quantitatively approximate color is not necessarily sensed to be visually approximate; ~~hence,~~

Hence, for the purpose of displaying and printing a beautiful image that can be obtained only using digital technology, a correction technology for memory colors, such as sky blue, human skin color and the green of trees, becomes important.

Please replace the paragraph, beginning at page 4, line 10, of the specification with the following rewritten paragraph:

The entire disclosures of Japanese Laid-open Patent Application No. Sho 62-281062, Japanese Laid-open Patent Application No. Hei 02-96477 and Japanese Laid-open Patent Application No. Hei 06-78320 are incorporated herein by reference in itstheir entirety.

Please replace the paragraph, beginning at page 5, line 4, of the specification with the following rewritten paragraph:

In Japanese Laid-open Patent Application No. Hei 02-96477, a correction region and the weight of correction are calculated according to the product of hue and saturation weighting functions, and hue, saturation and luminance are corrected by the amount proportional to the weight. Color continuity can be maintained by gently setting the weighting function in a wide range; however. However, the correction direction inside the correction region is still the same direction, and there is a color that is corrected in a direction opposed to the desirable correction direction.

Please replace the paragraph, beginning at page 6, line 7, of the specification with the following rewritten paragraph:

The above-mentioned inventions are not intended to carryprior art has carried out memory color correction not havingbut with side effects almost completely, but they are intended to shift such nearly similar colors in this way. Since the color correction technologies of correcting the inherent characteristics of devices were being developed as described above, the correction accuracy of the above-mentioned color correction was insufficient; on the assumption of this, the. The color regions unable to be corrected properly because of such reasons were corrected as a whole; it seems that there were no higher requests in those days.

Please replace the paragraph, beginning at page 6, line 19, of the specification with the following rewritten paragraph:

Hence, a side effect is caused of correcting colors that should not be corrected essentially ~~is caused~~. In addition, it is inevitable that other objects included in the memory color region that should be corrected essentially but accidentally having colors close to the color to be corrected are corrected. Furthermore, gradation is apt to become discontinuous, and color jumping occurs, whereby image quality degradation may be caused, beyond the effect of memory color correction.

Please replace the paragraph, beginning at page 8, line 5, of the specification with the following rewritten paragraph:

For the purpose of solving the above-mentioned problems, a first invention-aspect of the present invention is an image processing apparatus of correcting the color of a predetermined range of a pixel signal for each pixel included in an input image signal, comprising:

Please replace the paragraph, beginning at page 8, line 19, of the specification with the following rewritten paragraph:

Furthermore, a second invention-aspect of the present invention is an image processing apparatus of correcting the color of a predetermined range of a pixel signal for each pixel included in an input image signal, comprising:

Please replace the paragraph, beginning at page 9, line 1, of the specification with the following rewritten and additional paragraphs:

color conversion means of carrying out correction to make the color of said pixel signal coincident with or close to said target color by using the luminance component in the color of said pixel signal, two chromaticity components excluding said luminance component in the color of said pixel signal, and said target value, wherein

said color conversion means determines said correction degree by using not only said two chromaticity components of said pixel signal to be corrected but also said luminance component of said pixel signal to be corrected.

Please replace the paragraph, beginning at page 9, line 7, of the specification with the following rewritten paragraph:

Furthermore, a third invention-aspect of the present invention is the image processing apparatus in accordance with the first invention-aspect of the present invention, wherein said color conversion means comprises:

Please replace the paragraph, beginning at page 10, line 3, of the specification with the following rewritten paragraph:

Furthermore, a fourth invention-aspect of the present invention is an image processing apparatus in accordance with the second invention-aspect of the present invention, wherein said color conversion means comprises:

Please replace the paragraph, beginning at page 10, line 18, of the specification with the following rewritten paragraph:

Furthermore, a fifth invention-aspect of the present invention is an image processing apparatus in accordance with the fourth invention-aspect of the present invention, wherein said intensity determination means comprises:

Please replace the paragraph, beginning at page 11, line 7, of the specification with the following rewritten paragraph:

Still further, a sixth invention-aspect of the present invention is the image processing apparatus in accordance with the fourth invention-aspect of the present invention, wherein said intensity determination means comprises:

Please replace the paragraph, beginning at page 11, line 21, of the specification with the following rewritten paragraph:

Still further, a seventh invention-aspect of the present invention is the image processing apparatus in accordance with the fourth invention-aspect of the present invention, wherein said intensity determination means comprises:

Please replace the paragraph, beginning at page 12, line 12, of the specification with the following rewritten paragraph:

synthesizing means of synthesizing the candidates of said first, second and third correction intensities and outputting the result as said correction intensity.

Please replace the paragraph, beginning at page 12, line 15, of the specification with the following rewritten paragraph:

Still further, an eighth invention-aspect of the present invention is the image processing apparatus in accordance with the third or fourth invention-aspect of the present invention, wherein said correction means corrects each of said two chromaticity components to a value obtained when each of said two chromaticity components and two target chromaticity values output from said target color setting means are internally divided depending on said correction intensity.

Please replace the paragraph beginning at page 12, line 24, of the specification with the following rewritten paragraph:

Still further, a ninth invention-aspect of the present invention is the image processing apparatus in accordance with the third or fourth invention-aspect of the present invention, wherein

Please replace the paragraph beginning at page 13, line 13, of the specification with the following rewritten paragraph:

Still further, a 10th invention-aspect of the present invention is the image processing apparatus in accordance with the third or fourth invention-aspect of the present invention, wherein

Please replace the paragraph beginning at page 14, line 8, of the specification with the following rewritten paragraph:

Still further, an 11th invention-aspect of the present invention is the image processing apparatus in accordance with the third invention-aspect of the present invention, wherein said correction degree setting means determines said correction degree according to said input image signal and photographic information at the time when an input image is taken.

Please replace the paragraph beginning at page 14, line 15, of the specification with the following rewritten paragraph:

Still further, a 12th invention-aspect of the present invention is the image processing apparatus in accordance with the 11th invention-aspect of the present invention, wherein said correction degree setting means comprises:

Please replace the paragraph beginning at page 15, line 5, of the specification with the following rewritten paragraph:

Still further, a 13th invention-aspect of the present invention is the image processing apparatus in accordance with the 12th invention-aspect of the present invention, wherein said image identification means and said photographic information identification means identify whether a person is included in an image or not.

Please replace the paragraph beginning at page 15, line 11, of the specification with the following rewritten paragraph:

Still further, a 14th invention-aspect of the present invention is the image processing apparatus in accordance with the 12th invention-aspect of the present invention, wherein said image identification means and said photographic information identification means identify whether the sky is included in an image or not.

Please replace the paragraph beginning at page 15, line 17, of the specification with the following rewritten paragraph:

Still further, a 15th invention-aspect of the present invention is the image processing apparatus in accordance with the 12th invention-aspect of the present invention, wherein said image identification means and said photographic information identification means identify whether green plants are included in an image or not.

Please replace the paragraph, beginning at page 15, line 23, of the specification with the following rewritten paragraph:

Still further, a 16th invention-aspect of the present invention is the image processing apparatus in accordance with the first or second invention-aspect of the present invention, comprising:

Please replace the paragraph, beginning at page 16, line 12, of the specification with the following rewritten paragraph:

Still further, a 17th invention-aspect of the present invention is an image processing method of correcting the color of a predetermined range of a pixel signal for each pixel included in an input image signal, comprising:

Please replace the paragraph, beginning at page 16, line 25, of the specification with the following rewritten paragraph:

Still further, an 18th invention-aspect of the present invention is an image processing method of correcting the color of a predetermined range of a pixel signal for each pixel included in an input image signal, comprising:

Please replace the paragraph, beginning at page 17, line 13, of the specification with the following rewritten paragraph:

Still further, a 19th invention-aspect of the present invention is a program of the image processing apparatus in accordance with the first invention-aspect of the present invention, the program being used to operate a computer as:

Please replace the paragraph, beginning at page 18, line 1, of the specification with the following rewritten paragraph:

Still further, a 20th invention-aspect of the present invention is a program of the image processing apparatus in accordance with the second invention-aspect of the present invention, the program being used to operate a computer as:

Please replace the paragraph, beginning at page 18, line 14, of the specification with the following rewritten paragraph:

Still further, a 21st invention-aspect of the present invention is a recording medium having a program in accordance with the 19th or 20th invention-aspect of the present invention, said recording medium being processable using a computer.

Please replace the paragraph, beginning at page 18, line 19, of the specification with the following rewritten paragraph:

Still further, a 22nd invention-aspect of the present invention is a printer comprising:

Please replace the paragraph, beginning at page 19, line 1, of the specification with the following rewritten paragraph:

the image processing apparatus in accordance with the first or second invention-aspect of the present invention is used for said image processing means.

Please replace the paragraph, beginning at page 19, line 4, of the specification with the following rewritten paragraph:

Still further, a 23rd invention-aspect of the present invention is a television receiver comprising:

Please replace the paragraph, beginning at page 19, line 15, of the specification with the following rewritten paragraph:

Still further, a 24th invention-aspect of the present invention is a projector apparatus comprising:

Please replace the paragraph, beginning at page 19, line 25, of the specification with the following rewritten paragraph:

Still further, a 25th invention-aspect of the present invention is a photographing apparatus comprising:

Please replace the paragraph, beginning at page 20, line 8, of the specification with the following rewritten paragraph:

Still further, a 26th invention-aspect of the present invention is a mobile communication terminal comprising:

Please replace the paragraph, beginning at page 24, line 7, of the specification with the following rewritten paragraphs:

FIG. 17 is a block diagram showing a configuration of a portable telephone in accordance with Embodiment 8 of the present invention; and

FIG. 18(a) is an explanatory view of a turn-back in the case of one dimension wherein one output corresponds to one input, two inputs, or three inputs; and

Please replace the paragraph, beginning at page 24, line 10, of the specification with the following rewritten paragraphs:

FIG. 18-18(b) is an explanatory view of a turn-back in the (a*, b*) plane in accordance with Embodiment 2 of the present invention.

Please replace the paragraph, beginning at page 38, line 24, of the specification with the following rewritten paragraph:

A supplementary description regarding the meaning of the turn-back in the above-mentioned (a*, b*) plane is given herein. FIG. 18(a) is an explanatory view of the turn-back in the case of one dimension wherein one output corresponds to one input, two inputs, or three inputs. Furthermore, FIG. 8(b) is an explanatory view of the turn-back in the (a*, b*) plane.

Please replace the paragraph, beginning at page 58, line 7, of the specification with the following rewritten paragraph:

As both the hue-use function generation means 210C and the luminancesaturation-use function generation means 210E, those shown in FIGS. 6(b) and 6(d) are used. Their effects can be raised further by their respective independent optimization as a matter of course.

Please replace the paragraph, beginning at page 68, line 13, of the specification with the following rewritten paragraph:

In Expression 3, && means logical AND operation. In other words, A&&B (A and B are logical expressions) becomes 1 when both A and B are 1, and becomes 0 when both of A and B are not 1 and when either one of A and B is not 1. Hence, Expression 3 represents that C = 1 when Bmean is larger than Rmean, Rmean is larger than Gmean and Lmean is larger than Lth and that C = 0 in the other cases. Herein, C = 1 represents that the region is a sky region candidate, and C = 0 represents that the region is not a sky region candidate.

Please replace the paragraph, beginning at page 72, line 7, of the specification with the following rewritten paragraph:

In addition, the operation of the sky region candidate detection means 610A-612 can also be changed according to the judgment results from the photographic information. For example, since the sky is not used as a main object usually, a sky region judgment mask of using regions other than the object region as the sky region judgment target can also be obtained by using information regarding the position and region of the object in the photographic information.

Please replace the paragraph, beginning at page 76, line 7, of the specification with the following rewritten paragraph:

In addition, the correction degree setting means 600B comprises a sky-person image identification means 610B of obtaining reliability TP_a of including a person in an image according to an image signal, a photographic information identification means 620B of obtaining reliability TP_b of including a person in an image according to photographic information, and a correction degree determination means 630B of determining correction degree K according to the reliability TP_a output from the sky-person image identification means 610B and the reliability TP_b output from the photographic information identification means 620B.

Please replace the paragraph, beginning at page 79, line 22, of the specification with the following rewritten paragraph:

In the case that no photographic information has been recorded, the photographic information identification means ~~620A-620B~~ does not output the reliability TP_b, and the correction degree determination means determines the correction degree K by using only the reliability TP_a.

Please replace the paragraph, beginning at page 83, line 13, of the specification with the following rewritten paragraph:

In addition, the image processing apparatus 100Q is the image processing apparatus described in either one of the above-mentioned embodiments.

Please replace the paragraph, beginning at page 91, line 22, of the specification with the following rewritten paragraph:

Other components of the configuration shown in FIG. 16 are common to the video movie camera and the digital camera. Hence, in the subsequent description, the apparatus shown in FIG. 15-16 is described as the video movie camera 1020; however, the subsequent description can also be applied similarly to the digital camera.

Please replace the paragraph, beginning at page 94, line 12, of the specification with the following rewritten paragraph:

The image data subjected to memory color conversion using the image processing apparatus ~~1001-1000~~ is compressed and encoded using the encoding means 1026 and stored in the memory card 1027, the tape 1028 or the optical disc 1029.

Please delete "INDUSTRIAL APPLICABILITY" at page 100, line 20.